

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-2 (Canceled).

Claim 3 (Currently Amended) A ceramic heater, ~~for heating a semiconductor,~~ comprising a ceramic substrate and a heating element disposed on ~~the surface or internally thereof~~ a surface of the ceramic substrate or inside the ceramic substrate, wherein the level of α -rays radiated from said ceramic substrate exceeds $0.25 \text{ c/cm}^2 \cdot \text{hr}$ and is not higher than $50 \text{ c/cm}^2 \cdot \text{hr}$.

Claims 4-7 (Canceled).

Claim 8 (New) The ceramic heater according to claim 3, wherein said ceramic substrate is in a disk form.

Claim 9 (New) The ceramic heater according to claim 3, wherein said ceramic substrate comprises a nitride ceramic, a carbide ceramic or an oxide ceramic.

Claim 10 (New) The ceramic heater according to claim 3, wherein said ceramic substrate contains a sintering aid.

Claim 11 (New) The ceramic heater according to claim 3, wherein said ceramic substrate comprises a bottomed hole and a temperature probe embedded in the bottomed hole.

Claim 12 (New) The ceramic heater according to claim 3, wherein said ceramic heater is used at a temperature of -100°C to 800°C.

Claim 13 (New) The ceramic heater according to claim 3, wherein said ceramic heater heats a semiconductor wafer distanced from the ceramic substrate.

Claim 14 (New) The ceramic heater according to claim 3, wherein the level of α -rays radiated from said ceramic substrate is not higher than 5 c/cm²·hr.

Claim 15 (New) The ceramic heater according to claim 3, wherein said ceramic substrate is in a disk form having a diameter of 200 mm or more.

Claim 16 (New) The ceramic heater according to claim 3, wherein said ceramic substrate has a thickness of 0.5 to 50 mm.

CLAIMS

1. A ceramic heater, wherein a resistance heating element is arranged on a surface of a disc-shaped ceramic substrate or 5 inside the substrate,

characterized in that said resistance heating element is composed of a mixture of a resistance heating element having a concentric or spiral pattern and a resistance heating element having a pattern of a winding line.

10 2. A ceramic heater, wherein a resistance heating element is arranged on a surface of a disc-shaped ceramic substrate or inside the substrate,

characterized in that said resistance heating element is 15 composed of a mixture of a resistance heating element having a concentric or spiral pattern and a resistance heating element having a pattern of repeated winding lines.

20 3. The ceramic heater according to claim 1 or 2, wherein the resistance heating element having the pattern of the winding line or the pattern of the repeated winding lines is formed at least in a peripheral portion of the disc-shaped ceramic substrate.

25 4. The ceramic heater according to any of claims 1 to 3, wherein said ceramic substrate is made of a non-oxide ceramic.

5. The ceramic heater according to any of claims 1 to 3, wherein said ceramic substrate is made of a nitride ceramic.

30 6. The ceramic heater according to any of claims 1 to 3, wherein said ceramic substrate is made of a carbide ceramic.

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Related Case Serial No: 101766,027
Related Case Filing Date: 01-29-04

CLAIMS

1. A ceramic substrate comprising a conductor layer formed therein, characterized in that a section of the edge of the conductor layer is in a peaked shape.
2. The ceramic substrate according to claim 1, wherein the conductor layer is a resistance heating element and functions as a hot plate.
3. The ceramic substrate according to claim 1 or 2, wherein the conductor layer is an electrostatic electrode and functions as an electrostatic chuck.
4. The ceramic substrate according to any of claims 1 to 3, wherein the conductor layer has a portion in the peaked-shape having a width of 0.1 to 200 μm .
5. A process for producing a ceramic substrate, characterized by printing a conductor layer on a ceramic green sheet, integrating the green sheet with another green sheet under heating and pressure, and then sintering the ceramic powder.

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CLAIMS

1. A ceramic substrate for a semiconductor-producing/examining device having a conductor formed on a surface of the ceramic substrate or inside the ceramic substrate,
wherein:
said substrate is made of a non-oxide ceramic containing oxygen; and
10 the pore diameter of the maximum pore thereof is 50 μ m or less.
2. The ceramic substrate for the semiconductor-producing/examining device according to claim 1,
15 wherein said non-oxide ceramic is a nitride ceramic.
3. The ceramic substrate for the semiconductor-producing/examining device according to claim 1,
wherein said non-oxide ceramic is a carbide ceramic.
20
4. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 1 to 3,
wherein said ceramic substrate contains oxygen in an amount
25 of 0.05 to 10% by weight.
5. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 1 to 4,
30 wherein said ceramic substrate has a porosity of 5% or less.
6. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 1 to 5,

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wherein said ceramic substrate is used within the temperature range of 100 to 700 °C.

7. The ceramic substrate for the
5 semiconductor-producing/examining device according to any of claims 1 to 6,

wherein said ceramic substrate has a thickness of 25 mm or less, and a diameter of 200 mm or more.

10 8. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 1 to 7,

wherein said ceramic substrate has a plurality of through holes into which lifter pins for a semiconductor wafer will be
15 inserted.

CLAIMS

1. A carbon-containing aluminum nitride sintered body comprising: carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon; in a matrix made of aluminum nitride.
2. The carbon-containing aluminum nitride sintered body according to claim 1,
 - 10 wherein: said carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon, is at least one of amorphous carbon, and carbon forming solid solution in the phase of aluminum nitride crystal.
- 15 3. The carbon-containing aluminum nitride sintered body according to claim 1 or 2,
 - 10 wherein the content of said carbon is from 200 to 5000 ppm.
- 20 4. A carbon-containing aluminum nitride sintered body comprising both of:
 - 10 carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon; and
 - 25 carbon whose peak can be detected thereon,
 - 10 in a matrix made of aluminum nitride.
- 25 5. The carbon-containing aluminum nitride sintered body according to claim 4,
 - 10 wherein:
 - 10 said carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon, is at least one of amorphous carbon, and carbon forming solid solution in the phase of aluminum nitride crystal; and
 - 35 said carbon whose peak can be detected thereon is

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crystalline carbon.

6. The carbon-containing aluminum nitride sintered body according to claim 4 or 5,

5 which comprises both of crystalline carbon and amorphous carbon.

7. The carbon-containing aluminum nitride sintered body according to any of claims 4 to 6,

10 which comprises said carbon in a total amount of 200 to 5000 ppm.

8. The carbon-containing aluminum nitride sintered body according to any of claims 1 to 7,

15 wherein said matrix contains a sintering aid comprising at least one of an alkali metal oxide, an alkali earth metal oxide, and a rare earth oxide.

9. The carbon-containing aluminum nitride sintered body according to any of claims 1 to 8,

20 wherein its brightness defined in JIS Z 8721 is N4 or less.

10. A ceramic substrate for a semiconductor-producing/examining device,

25 wherein: a ceramic substrate comprising carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon, is provided with a conductor.

30 11. The ceramic substrate for the semiconductor-producing/examining device according to claim 10,

35 wherein: said carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon, is at least one of amorphous carbon, and carbon

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forming solid solution in the phase of ceramic crystal.

12. The ceramic substrate for the semiconductor-producing/examining device according to claim 10

5 or 11,

wherein the content of said carbon is from 200 to 5000 ppm.

13. A ceramic substrate for a

10 semiconductor-producing/examining device,

wherein a ceramic substrate: comprising both of:
carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon; and

15 carbon whose peak can be detected thereon,
is provided with a conductor.

14. The ceramic substrate for the

semiconductor-producing/examining device according to claim

20 13,

wherein:

25 said carbon whose peak cannot be detected on its X-ray diffraction chart or whose peak is below its detection limit thereon, is at least one of amorphous carbon, and carbon forming solid solution in the phase of aluminum nitride crystal; and
said carbon whose peak can be detected thereon is crystalline carbon.

15. The ceramic substrate for the
30 semiconductor-producing/examining device according to claim 13
or 14,

wherein the content of said carbon is from 200 to 5000 ppm.

35 16. The ceramic substrate for the

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semiconductor-producing/examining device according to any of claims 9 to 15,

wherein said ceramic substrate contains a sintering aid comprising at least one of an alkali metal oxide, an alkali earth metal oxide, and a rare earth oxide.

17. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 9 to 16,

10 wherein its brightness defined in JIS Z 8721 is N4 or less.

18. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 9 to 17,

15 wherein:
said conductor is an electrostatic electrode; and
said ceramic substrate functions as an electrostatic chuck.

20 19. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 9 to 17,

wherein:
said conductor is a resistance heating element; and
25 said ceramic substrate functions as a hot plate.

20. The ceramic substrate for the semiconductor-producing/examining device according to any of claims 9 to 17,

30 wherein:
said conductor is formed: on a surface of the ceramic substrate; and inside the ceramic substrate;
said inside conductor is at least one of a guard electrode and a ground electrode; and
35 said ceramic substrate functions as a wafer prober.

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